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ABSTRACT

The COUNSELINK Feasibility and Planning Project acquired the information necessary to determine the feasibility and desirability of creating a computer-based telecommunications network for professional counselors through a review of the literature, use of online information systems and local bulletin board systems, and communication with managers of online networks and bulletin boards. The results of this investigation, including recommendations for a pilot project, are included in this report. The report looks at the current status of telecommunications, explains how a telecommunication system works, and considers the need for networking among counseling professionals. Options for COUNSELINK are considered and various ways that such a system could be implemented are presented. Desired features of COUNSELINK are discussed. A section on online networks through mainframe connections looks at existing services available through General Videotex, CompuServe, and The Source. Individual bulletin board systems are also described. Budget considerations addressed include online network costs, hardware expenses, and individual bulletin board system costs. The report concludes with a set of recommendations, the overall recommendation being that, if the American Association for Counseling and Development is willing to commit sufficient energy and money to the project, a fully private network be established through General Videotex's GROUPLINK or The Source's Private Network Services. A glossary of terms used in the computer and telecommunications field is provided. (NB)

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COUNSELINK

A Pilot Project Proposal

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INTRODUCTION

REVIEW OF PROJECT GOALS

The COUNSELINK Feasibility and Planning Project was designed to acquire the information necessary to determine the feasibility and desirability of creating a computer-based telecommunications network for professional counselors.

To this end, we explored the current literature (which is extremely limited), utilized online information systems and local bulletin board systems, and communicated with managers of both online networks and bulletin boards. The results of this investigation, including recommendations for the pilot project, are summarized below.

READING THIS REPORT

We have included a glossary of terms used in the computer and telecommunications field to assist the reader. It might be helpful for newcomers to telecommunications to start with a review of the glossary, to familiarize themselves with the terms used throughout the report.

Details for several of the numerous options for the pilot project have been included to allow the Association to make a well-informed decision in implementing the network, as well as to justify the recommendations made in the final sections.

TELECOMMUNICATIONS

CURRENT STATUS OF TELECOMMUNICATIONS

Telecommunications is the art and science of communicating across great and not-so-great distances. The concept of the "global village" has been around for some time now, but it is telecommunications which can make that idea a reality. Real-time communications are now possible around the globe, and almost instantaneous transmission of information is possible through the use of satellites. Large amounts of data may be transferred quickly and easily by connecting mainframe computers. But computers are not only for big business or military strategy.

Computers are at the forefront of modern scientific and technological innovation. New products, both hardware and software, are being developed, tested, and marketed in rapid succession. Powerful computers are getting smaller, and the refinement of computer technology, with its accompanying lower costs, means that more and more people can afford to buy and use computers for personal and small business use. Many people and organizations are beginning to make use of the new generations of powerful personal computers, such as the IBM AT models and clones.

Unfortunately, everyday computer use for word-processing and data storage (much less a more sophisticated task such as communication) is alien to many people. Computer buffs have known for years that it is not only possible, but enjoyable and even profitable, to connect an individual computer with other

computers, both personal and mainframe. Telecommunication uses now include sharing computer software through uploading and downloading programs, and sharing ideas through bulletin boards and other message systems. Large databases of specialized information have been created which provide fast and easy access to a great quantity of data.

HOW IT WORKS

Very basically, individual computers can communicate with each other by sending data across telephone wires. To do this, the digital (numerical; 0 and 1) signals on which a computer operates must be translated into analog (sound frequency) signals, sent across the phone lines, re-translated from analog to digital signals for the receiving computer to understand, and accepted into the receiving computer. The same process is then repeated by the receiving computer, in order to answer the first.

To accomplish this, the user needs: a keyboard to input (send) information, a video screen to receive information (output from the other computer), a microcomputer, and communications equipment and software (modem, communications card, and a communications or terminal emulator program).

The speed at which this communication occurs depends on the modem and its BAUD (speed) rating. The higher BAUD ratings offer the advantage of speed (and therefore less time getting the same information), but may have other costs (see BUDGET).

NEED FOR NETWORKING

Some professions more than others have adopted the

technology of the Information Age. Professionals from such diverse areas as medicine, agriculture, law, and aviation have discovered the ease and utility of telecommunications -- sharing ideas, disseminating new information, and getting feedback, as well as useful computer applications.

A Tucson, Arizona, social worker, Carlton F. Clark, MSW, has become interested in the use of computers by psychotherapists (Clark, 1988). He made a study earlier this year of the use of computers and the interest in networking by psychologists, social workers, and psychiatrists in southern Arizona (Clark, 1989, personal communication). Clark's study found, as this COUNSELINK project had expected, that there is a group of individuals interested in a network to discuss professional issues, and that many professionals have computers which could be used to contact the network, with the minimal additions of a modem and communications software.

Clark went online with his system in March, 1989. It is a proprietary, for-profit network. Access is available in southern Arizona.

OPTIONS FOR COUNSELINK

AN OVERVIEW

COUNSELINK, if created, could be implemented in a number of ways. The most versatile systems are those which reside on the powerful mainframe computers, and are usually offered through an information service (e.g., CompuServe). It is also possible to

create a network using a single computer as the base or center of operations. Generally, the single, personal computer (PC) system would be a bulletin board system with message capabilities and software sharing. The online service, on the other hand, would have a wider variety of services (including real-time conversations, conferencing, interactive games, and larger databases with more up-to-date information).

DESIRED FEATURES

The purpose of the COUNSELINK network is to create an interactive professional consulting and support service and quick access to new information. We also see the network as an inexpensive (no travel necessary) forum for formal and informal conferences.

To this end, several features have been identified as desirable in whatever option is chosen: user log; message file; bulletin board file; program uploading and downloading; real-time conversations capability; capacity for a large number of simultaneous users. It may be desirable at some point to offer online text-oriented (as opposed to graphics) games, and shopping services (merchandise listing and ordering) of appropriate professional equipment, books, etc.

It is important to note here that bulletin board systems offer less options and are generally designed to accommodate one user at a time. This user may chat with the SYSOP directly, but may only communicate with other users by leaving messages and then signing back on the BBS to check for replies. Real-time

conversations with other users are not, at this juncture, feasible on BBS. Bulletin boards are briefly covered nonetheless as an option for a limited pilot project.

ONLINE NETWORKS THROUGH MAINFRAME CONNECTIONS

Online networks, as stated previously, offer a wide range of services and advantages. The mainframe computers on which these networks run have multi-user capacity, high-volume data storage, rapid response, and national and often international access. Access to online networks is accomplished quite simply for the user through a communications network. These networks allow transmission of data through high-speed data links. The user calls a (usually) local telephone number and is connected through the communications network to the information service. Many information services have contracts with a communications network or have their own network, and there is no separate fee for the connection (beyond the charge for time on the information service). Once connected through the communications network to the online service, the user can access a variety of areas, as well as be switched by the communications network to other desired connections.

Existing Services

Online computer services grew out of computer time-sharing, when few medium-sized companies could afford high-speed computers, but could make use of the greater power. Companies with these powerful computers began to sell computer time to other companies. Eventually, the concept of selling time to

individual users developed. Expensive and elaborate computers were sitting idle after business hours. The consumer online information service was born.

There are quite a number of different online services available in the United States today. We have covered in the most depth the offerings of General Videotex, The Source, and CompuServe, which seem most in line with COUNSELINK objectives. General Electric does have services in the telecommunications and teleprocessing field through GE Information Services. Most of their applications are much more technical and oriented to interoffice (as opposed to interpersonal) communications. Since GE does not seem to offer the kinds of features and services we deem desirable, its information has not been included in this report.

General Videotex

General Videotex Corporation (GVC) runs DELPHI, a public information utility (a.k.a., an information service). However, for this project's purpose, their GROUPLINK Private Network is the option to consider. GROUPLINK is an individually customized, private network system. It is designed by GVC staff to the specifications of the purchaser. Access to the network is done directly, and only members can connect into it. (GVC even notes that the very existence of the network may be kept confidential.)

GROUPLINK is advertised as no more complicated to use than information services (which are designed with user ease in mind). It uses the same simple commands of the DELPHI system, and is

operated by GVC's host equipment. Access is worldwide by using any PC and modem, with local calls from 600 cities in the U.S. and Canada, and with access from other cities around the world.

Features of GROUPLINK include: Banner Messaging; Catalogues and Online Ordering; Conferencing (Real-time and Continuous); Database Management; Event Schedules and Calendars; File Management; Financial Services; Forms Capabilities; Infobase Management; Library Services; Mail Services; Member Directories; News Services; Polls and Questionnaires; Public Messaging; Sub-Networks; Text Management; Travel Services.

Banner message are simply those important announcements which are displayed on the user's screen automatically upon connecting with the network. Catalogues and online ordering are interactive systems, where the user can search catalogue listings, choose an item to purchase, place an order and indicate form of payment (usually a credit card). The order is then forwarded by electronic mail to the vendor. GROUPLINK can support multiple vendors on a private network.

Conferencing is one of the most important features to have in COUNSELINK. Real-time conferencing involves simultaneous, online interaction between users (like a telephone conference call). This network will support group conferences of various sizes, both public and private. Private conferences would allow only those who pre-register or are allowed to register online to join. Continuous conferences are ongoing (running) conversations which remain online as various users come and go. Users add their

comments to the conversation as they come upon it. Users do not have to be online simultaneously.

Public messaging is basically a bulletin board system, where messages are posted for others to see, and can be retrieved by date, subject, category, author, or any combination thereof. Access to these BBSs can be open to all users or limited.

A database offers a base of specialized information which may be searched, and then quickly scanned or completely read. GROUPLINK offers a structured management system of the database.

Infobase management allows for screens and files to be grouped by topic and searched by keyword, then downloaded by the user. The infobase files could be newsletters, journals, individual articles, press releases, programs, etc.

Schedules of events (conventions, meetings, seminars, workshops, etc.) placed in the network can be directly linked to registration forms, allowing members to sign up online.

Members may have a private workspace in the network where they may keep their own files. Complete file management resources (creating, editing, up/downloading) are available. Members can also share files in a common workspace.

Library services, financial services (quotes, news), news services (Associated Press wire), mail services (including FAX, Telex, language translation) and travel services are options available in GROUPLINK. Polls and questionnaires can be created and administered through GROUPLINK. Polls are tabulated online; questionnaire answers are gathered in an electronic mailbox for

offline analysis.

A member directory helps users locate other members by specific attributes (years in practice, specialty, etc.). Each member maintains his/her own directory entry to ensure privacy and up-to-date information.

Another important attribute of GROUPLINK are the sub-networks. In essence, these sub-networks act as the divisions of AACD now do -- they connect groups of individuals who share a specific interest and have reason at times to communicate separately from the larger network.

GROUPLINK offers a variety of billing options. With "single invoice billing" total network usage is charged to a single account, and usage statistics are given for each user. In "direct end-user billing" the individual user is billed directly for his/her connect charges.

There are three sub-options to the direct end-user billing: collect billing (where charges to certain areas of the network would be subsidized by the network owner); premium billing (where users pay the regular GROUPLINK connect charges plus a premium, 90 percent of which goes to the network owner); and sponsored time (where the network owner pays for a given amount of connect time for each user during the month and the user pays for time used over that amount).

GVC also offers support for their GROUPLINK networks, including voice support (as opposed to online assistance) by "highly trained and professional" staff. It offers comprehensive

and sophisticated services in what appears to be a fairly straight-forward manner. GVC provided the most detailed information and assistance of the network providers contacted.

CompuServe

CompuServe offers both public and private forums. A Forum on CompuServe is a "place" in the mainframe computer where individual users with similar interests can gather electronically and exchange information. Users may leave and receive messages, upload and download programs and information of note, read the latest bulletins, follow ongoing message conversations, and join real-time conferences. Although the information was not offered during contact with CompuServe, it appears that they offer a fully private network on the same lines as GROUPLINK.

The Source

The Source also offers both public and private networks. It is their recommendation that those groups interested in establishing a private network first utilize PARTICIPATE (or PARTI), their conferencing tool. Private conferences may be set up on PARTI, with the initiator of the conference controlling access to topics. PARTI also has bulletin board and private message capabilities.

Private Network Services through The Source are on an approval-basis only. A written proposal regarding the service, including its uses, needs, storage requirements, and user base, are required before contract negotiations begin with The Source.

The options on a Source private network are similar to those on GROUPLINK.

INDIVIDUAL BULLETIN BOARD SYSTEMS

As mentioned earlier, individual BBS run on a single microcomputer cannot begin to offer the services, availability to users, and speed of use which a (mainframe) information service can. The main advantage of a BBS is its inexpensive cost. It will allow users to leave messages, talk with the SYSOP, upload and download programs, register for real-world (as opposed to online) conferences. It will not allow for online conferences, immediate conversation with and feedback from other users, or multiple simultaneous users, a definite handicap for an organization with as many members as AACD. We do not recommend a BBS for the COUNSELINK pilot project.

BUDGET CONSIDERATIONS

ONLINE NETWORK COSTS

Setting up a private network is a moderately expensive proposition. For a GROUPLINK private network, the main network set-up fee is $5,000 (including a one-day manager training seminar) and each sub-network set-up is $500 (with a discount rate for 10 or more sub-networks of $250 each). Set-up fees for user names is $10/name, with a volume discount for 100 or more names at $5/username.

The base rate for usage or connect time charges (at 300, 1200, or 2400 BAUD) is 21 cents per minute, or $12.60 an hour. If

the user connects through Tymnet (a communications network), there are no surcharges in the contiguous United States. The company offers incentive rebates for volume connect time: over 250 hours up to 500 hours, the rebate is $0.90/hour; from 500 to 1,000 hours connect time, it is $1.20/hour; and over 1,000 hours, the network owner receives a rebate of $1.50/hour.

The set-up cost for a private network on The Source is also $5,000. Monthly usage commitments must be no less than $5,000. No more details were provided specifically delineating charges -- as stated, The Source recommends starting with a private conference in the PARTI teleconferencing area. They offer to waive the normal one-time registration fee of $29.95 for our members if we establish a PARTI conference "network." Connect charges on The Source range from $6.00 to $27.60 per hour, depending on the time of day and the services used, with a $10 monthly minimum charge per user. Access is through the Telenet communications network, with no connect surcharges from 1,200 local calling areas. There are extra charges on The Source for user file storage.

HARDWARE

Use of a private or public network through an online information service does not entail much in the way of hardware. The network manager must be able to access the system. To do this, s/he would need much the same equipment any other user might use: a microcomputer with modem and communications software. Hard disk storage, while not necessary when all the data is stored online, would be useful particularly for preparing

items for uploading to the network and for downloading information placed on the system by others, including programs, special announcements, questionnaire responses, etc. The expenditure for a microcomputer with these options could be as little as $3,000.

The IBM PS/2 Model 70-A21 is considered one of the best microcomputers on the market. It is fast but also expensive, at $11,995 (which includes a 120 MB hard disk). That goes beyond our rather basic needs. The Compaq 386 line (also using the 80386 microprocessor) is also excellent but much cheaper, starting at $4,499 with a 20 MB hard disk (sufficient for our needs).

IBM ATs are very popular in both business and personal applications. The ATs have the 30286 microprocessor (still fast and efficient). AT clones are available, often at slightly (to much) lower prices than the IBMs. The Epson Equity III was a Consumer Guide "Best Buy" for 1988. With a 28 MHz, 40 MB hard disk and 1.2 MB 5-1/4 inch floppy disk drive, the Equity is a great buy at just $3,299 (and that's list price). The best way to purchase a computer is to look locally for special offers, and to check with the organization's regular supplier (if there is one).

In addition to the set-up costs of the network and the hardware for the network manager(s), these networks will carry the costs of a part-time (and possibly full-time) manager and the amount of connect charge subsidies for users.

INDIVIDUAL BULLETIN BOARD SYSTEM COSTS

The hardware needed to create an individual BBS is very

similar to what is listed above for managing a network through an established host computer service. The main difference is in the importance of the hard disk. A 20 MB hard disk would be the minimum recommended, and a 40 MB would be preferable if the system is to have a large volume of users. Estimated cost of such a computer is between $3,000 and $4,000.

Many microcomputers today include internal modems. If not, an external modem can be purchased for $100-$200, depending on the BAUD rating. The computer needs software to allow it to communicate with other computers online. A number of these programs, such as ProComm, are also available free or for minimal charge.

Much BBS software is in the public domain and can usually be purchased for a minimal handling fee, often less than $5. Or it can be obtained free by downloading it off established BBSs. RBBS, TBBS, OPUS, and FIDO are all BBS software packages. Mach-10, written in Turbo Pascal, (a computer programming language), is supposed to be a new and powerful system. It is possible to write your own BBS program if you have basic understanding of computer programming. See Myers (1984) for how-to information.

Obviously, setting up a BBS is not extremely expensive. The disadvantage is in the limited number of options, as stated previously.

RECOMMENDATIONS

It is our belief that the time is right to implement the COUNSELINK Pilot Project. More and more professionals in the counseling field, in private practice and in agencies, are buying and using microcomputers. The advantages for users of a network such as COUNSELINK are clear: fast and easy access to new information, immediate consultation with one or more fellow professionals on urgent client needs or other professional issues, inexpensive professional conferences (no travel or hotel costs), and 24-hour access to services.

It is important that the members of AACD be informed about computer networking and the services which COUNSELINK can provide, and have an opportunity for feedback, as they are the group which the network will serve. We recommend placing announcements in both Guideposts and the Journal of Counseling and Development (prior to settling the final details of the system), requesting feedback from AACD members regarding their needs and interest in the system. (The survey originally planned for this project was deleted prior to final approval.)

In terms of the type of system for the project, we recommend starting the project on an existing host service. The choice is between holding private conferences on a public network or having a fully private network. The Source recommends starting on the public network system (their PARTI) and then making a decision to move to a private network. (GVC's DELPHI service is another public information service on which the network could be begun,

and then moved to GROUPLINK.) This is a useful approach if the Association is not sure it wishes to make a long-term commitment to the network as an integral part of AACD offerings. In that case, we would recommend that AACD set up a private conference through PARTI on The Source, as they offer a waiver of set-up fees for our members if we establish a conference network, and have a larger number of local access numbers.

Our overall recommendation, if AACD is willing to commit sufficient energy and money to the project, is to establish a fully private network through General Videotex's GROUPLINK or The Source's Private Network Services. Both offer a wide array of useful services. The Source has an advantage in that local calling access is available through 1,200 cities, as compared to General Videotex's 600 cities. Both cost $5,000 to establish, with $500 more for sub-networks. The Source also has a minimum monthly usage of $5,000.

General Videotex was very forthcoming with details on their considerable services. They also offer assistance in promoting a GROUPLINK network with potential users. Their private network service is very attractive and we recommend it over the others, with the reservation about limited local access.

Because services, access, and prices change (and because negotiations are possible), we recommend that if a decision is made to go with a fully private network, AACD representatives negotiate with General Videotex, The Source, and CompuServe to get the most services for the most competitive price.

One last key point is that each service requires a written proposal prior to approval for establishing a private forum or conference or a separate private network. This proposal would include a description of the target market (potential users), purposes of the network, estimated numbers of users, background information on the service provider (AACD, in this case), and an overview of the information and services you wish to provide. At the end of this report is a list of three representatives, one for each of the three information services covered in this report, who can be contacted for further details on beginning negotiations and preparing a prospectus.

GLOSSARY

ASCII: American Standard Code for Information Interchange; a standard system for the exchange and storing of data.

BAUD: Bits per second; notation for rating the speed of modem transmission.

BBS: Bulletin Board System; an online network run through a program on a single PC, which allows users to leave messages and receive replies (just like a physical bulletin board), and to upload and download computer programs.

BIT: BInary digIT; the smallest unit of microchip information; either a 1 or a 0 (an ON/OFF or YES/NO switch).

BYTE: the size of one character (letter, numeral, etc.); composed of eight bits.

CLONE: A computer which has been designed to be compatible with another computer (e.g., can run the same programs). Most commom are clones of IBM PC's, particularly the IBM XT and the newer, faster AT models.

COMMUNICATIONS NETWORK: A data transmission network which puts information from a modem into "packets" and then electronically directs those to the designated receiver (for our purposes, usually an information service).

COMMUNICATIONS SOFTWARE: Translates microcomputer characters into the standard ASCII characters for transmission; allows the microcomputer to emulate a "dumb" terminal (so that it may function as part of the computer with which it connects online). May also automatically dial, log on, and upload/download files.

COMMUNICATIONS CARD: Computer device which causes information to be sent serially rather parallel (8 bits at a time) to peripherals (including modems).

CPU: Central Processing Unit; the microprocessor, it is the part of the computer which operates on data. The design sophistication of the CPU determines the speed at which data can be processed internally (rated in MHz).

DATABASE: A collection of information organized for swift search and retrieval by computer; may be educational, technical, financial, news, or other information.

ELECTRONIC MAIL: EMail; online system for sending and receiving messages, just as one would a pen-and-paper letter. Users have "electronic mailboxes" with computer code "addresses" where messages are sent by the writer, and may be stored.

FLOPPY DISK: A form of magnetic media on which data can be stored; now come in 5-1/4 inch and 3-1/2 inch sizes, with varying densities (and hence differing storage capacities).

GATEWAY: Connector of computer networks (technology, software).

HARD DISK: Magnetic storage medium which is fixed inside the computer. Like a floppy, and unlike RAM, hard disks maintain their stored information without power.

HARDWARE: The physical components of a computer system: the disk drives, motherboard (CPU, etc.), keyboard, monitor, etc.

INFORMATION SERVICE: System where information maintained in a mainframe computer may be retrieved by a physically separate computer through data transmission on telephone lines (e.g., CompuServe, The Source, GroupLink). Many offer a wide array of services: databases, EMail, forums, shopping, etc.

KB: Kilobyte; one thousand bytes (characters).

MAINFRAME: A type of computer; has come to refer to those large computers which have massive memory capacity and processing speed, as opposed to PC's.

MB: Megabyte; one million bytes (characters).

MICROCOMPUTER: Computer which operates through the use of a microchip (invention of which revolutionized computer technology). PCs are microcomputers.

MHz: Megahertz; one million hertz (a unit of frequency equal to one cycle per second). The greater the MHz of the CPU, the faster the computer can process data.

MODEM: MOdulator/DEModulator. The device by which digital data (bits) are transformed into a frequency, and vice versa. Modems come in different speeds, from 300-9600 BAUD. Modems can be internal or external (peripheral).

MOTHERBOARD: The board or card inside the computer on which reside the microchips for the CPU, RAM, ROM, and more.

NETWORK: Any connection of two or more separate computers. Most often refers to a formally established communications system.

ONLINE: Direct communications or control by a computer; in telecommunications, it generally refers to a connection by line (telephone line) of two computers.

PARALLEL: Method of data transmission where multiple bits of data are sent simultaneously, usually down eight parallel lines.

PC: A personal computer or microcomputer, as opposed to a mainframe computer.

PERIPHERALS: Any auxiliary equipment, external to the computer, which interacts with the computer and is connected through ports or terminals (e.g., printers, modems, etc.)

PORTS: The physical connectors or terminals by which peripherals are connected to the computer (through cables).

PROGRAM: A sequence of coded instructions which allows the computer to perform the desired functions.

RAM: Random Access Memory; the memory portion of a computer which manipulates data and programs, which is lost when power is turned off. More RAM equals faster-running programs.

REAL-TIME: The actual time in which a physical process takes place. (For example, a real-time conversation by computer would mean the parties were actually online with their computers at the same time, and that the data was being communicated at the same "real" time they were sending it).

ROM: Read Only Memory; preprogrammed by computer manufacturer; contains operating systems and languages which may be read from here but not altered.

RS232C: A serial port which is one of the most common for making connections between a modem and a terminal.

SERIAL: Method of data transmission where one bit at a time is sent along a single data path.

SOFTWARE: Computer programs; the programs and procedures of operation (as opposed to hardware, which are the physical components necessary to access the programs).

SYSOP: SYStem OPerator; the person who manages the bulletin board, network, forum, etc. Includes maintenance of database, answering queries, assigning security levels.

TELECOMMUNICATIONS: Generally, communications at a distance. Now used to refer to long-distance computer communications, as well as audio and video transmissions, by telephone line and/or by satellite.

INFORMATION SERVICES - CONTACT PERSONS

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